

USEFULNESS OF THE MNA® IN THE LONG-TERM AND ACUTE-CARE SETTINGS WITHIN THE UNITED STATES

B. LANGKAMP-HENKEN

Associate Professor, Food Science and Human Nutrition Department, University of Florida, PO Box 110370, Gainesville, FL 32605 USA, Tel.: 352-392-1991 ext. 205, Fax: 352-392-9467, Email: henken@ufl.edu

Abstract: The Mini Nutritional Assessment (MNA®) is a tool that was developed for use with elders to provide rapid assessment of nutritional risk. Although this screening tool has been validated and frequently used in long-term and acute-care settings in Europe, the MNA® has not been used extensively within the United States. The MNA® may need to be validated for use within U.S. nursing and acute-care facilities because validity may be affected by the acuity of illness, the use of aggressive nutrition support, which makes the scoring of the MNA® difficult, and the age of patients admitted for care (acute care). Additionally, in most long-term care settings, a specific screening tool (Minimum Data Set) is already required to assess resident function including nutritional risk. The MNA® may be more useful in an assisted living facility, where nutrition screening and assessment tools are not currently in place, yet maintenance of functional status is important to prevent transfer to a nursing facility.

Key words: Nursing home, hospital, elder, nutrition screen.

Introduction

The prevalence of malnutrition is high in hospitalized elders resulting in increased occurrence of complications including infection and increased risk of mortality (1-4). Identifying those at nutritional risk and intervening to improve nutrition-related outcomes, such as physical function, complications, and recovery from disease (5), are important components of the health-care process. The Mini Nutritional Assessment (MNA®) is a tool that was developed to provide a rapid assessment of nutritional risk in elders (6), and numerous studies in Europe demonstrate the validity and reliability of this tool (as reviewed in (7)).

The MNA® score is also predictive of adverse clinical events and mortality (8), which may be due to the fact that the MNA® score is associated with immune status. In 2004, we showed that a low MNA® score was associated with impaired immune function in elders (mean age >80 years), who had pressure ulcers and resided in nursing homes. Of those residents who were classified as at risk for malnutrition or malnourished by the MNA®, only about 30% responded to one or more antigens in delayed-type hypersensitivity testing, a measure of cell-mediated immunity; whereas, 75% of the residents who were classified as well nourished responded in a similar manner (9). Residents who were classified as malnourished had reduced whole blood lymphocyte proliferative responses to T and B cell mitogens (concanavalin A and pokeweed), as well as a reduced neutrophil respiratory burst. Murasko et al. (10) showed that elders, 70 to 106 years of age, were twice as likely to die over a 25-month period when they had a lymphocyte proliferative response to three mitogens (phytohemagglutinin, concanavalin A, pokeweed) that was less

than 10% of that of young controls.

Some have suggested that the MNA® is a better predictor of frailty than nutritional status (8). However, when patients, classified by the MNA® as at risk of malnutrition or malnourished, are nutritionally repleted; body weight, fat-free mass, and MNA® score increase (11-13). This suggests that the MNA® reflects nutritional status.

The MNA® has not been used extensively within the United States. Before encouraging the use of the MNA® in long-term or acute-care settings within the U.S., it may be helpful to look at the requirements for screening and assessing nutritional risk by the agencies involved in accreditation and reimbursement for health care, as well as the demographics of the populations within U.S. elder-care settings. This review will examine the usefulness of the MNA® in long-term and acute-care settings within the U.S.

Long-term care

Nursing homes

Based on the 1999 National Nursing Home Survey, there are approximately 18,000 nursing homes or nursing facilities within the United States with an average of 105 beds per facility and a total of 1.6 million residents (14) (Downloadable data files from the 2004 National Nursing Home Survey were released August 8, 2006 and are available at <http://www.cdc.gov/nchs/nnhs.htm>). Most residents are admitted to nursing homes from hospitals (46%) or private or semiprivate places of residence (30%). Resident characteristics are shown in Table 1. The average length of stay for a resident at the time of survey was 892 days. Within the survey year (October 1998 through September 1999), approximately 2.5

million residents were discharged from nursing homes, the majority of which were discharged because they had recovered or stabilized (33%) or died (24%) (14).

Table 1

Characteristics of nursing home residents within the United States based on the 1999 National Nursing Home Survey (14)

	Number of residents (percentage)
Age ^a	
under 65 years	158,700 (10%)
65 through 74 years	194,800 (12%)
75 through 84 years	517,600 (32%)
85 years and over	757,100 (46%)
Sex ^a	
male	457,900 (28%)
female	1,170,400 (72%)
Race ^a	
white	1,394,900 (86%)
black	178,700 (11%)
Aids used ^b	
transfer equipment	206,900 (14%)
walker	383,600 (26%)
wheelchair	919,600 (63%)
Receives help with activities of daily living (ADL) ^{b,c}	
no help	60,200 (4%)
1 ADL	96,700 (7%)
2 ADL	200,600 (14%)
3 ADL	456,500 (31%)
4 ADL	484,500 (33%)
5 ADL	171,100 (13%)

a. Based on all residents surveyed (n=1,628,300); b. Based on residents who are ≥65 years of age (n=1,469,500); c. Activities of daily living included: bathing, dressing, eating, transfer, using toilet room.

Nursing homes that are certified to be reimbursed for resident care by Medicare (Federal health insurance program for individuals ≥65 years of age) or Medicaid (joint Federal – State program that finances health-care services for individuals of low income and limited resources) are required to assess resident function using the Resident Assessment Instrument (RAI). This instrument has two components – the Minimum Data Set (MDS) and the Resident Assessment Protocols (RAPs). The MDS consists of sets of screening elements that provide a comprehensive assessment. The RAPs provide additional assessment of “triggered” conditions (15). Residents must be assessed within 14 days of admission to a nursing facility, annually, and when a significant change in status occurs (16). One section of the MDS is dedicated to oral/nutritional status (Table 2); however, information obtained

in other sections (oral/dental status, activity patterns, disease diagnoses, special treatments and procedures, skin condition) would also be important for assessing nutritional risk and planning interventions.

Table 2

Screening elements of the Minimum Data Set (MDS) from Section K. Oral/Nutritional Status (16)

• Oral problem
chewing problem
swallowing problem
mouth pain
• Height and weight
• Weight change
weight loss: ≥5% in the last 30 days; or ≥10% in the last 180 days
weight gain: ≥5% in the last 30 days; or ≥10% in the last 180 days
• Nutritional problems
complains about the taste of many foods
regular or repetitive complaints of hunger
leaves 25% or more of food uneaten at most meals
• Nutritional approaches
parenteral/IV
feeding tube
mechanically altered diet
syringe (oral feeding)
therapeutic diet
dietary supplement between meals
plate guard, stabilized built-up utensil, etc.
on a planned weight-change program
• Parenteral or enteral intake
1% to 25%
26% to 50%
51% to 75%
76% to 100%

Although many of the elements of the MDS are similar to those in the MNA® screening form (MNA®-SF) or full MNA®, the use of the MDS as a nutrition screening or assessment tool has not been validated. Likewise, the MNA® has not been validated for use in nursing facilities within the U.S. where the level of acuity and frailty may be more severe than is found in individuals residing in nursing homes in other countries (Table 1) and where aggressive nutritional support can make it difficult to score nutritional risk using the MNA®. Suominen and colleagues (17) assessed nutritional status of residents of all nursing homes in Helsinki, Finland and noted that “the use of nutritional supplements was very rare (4%)”. We recently examined nutritional intake of elders in 7 nursing homes in the southeastern U.S. (Florida). Of the 148 recruited residents, 49% were receiving high-energy or high-protein supplements, 63% were receiving combined vitamin and

USEFULNESS OF THE MNA® IN THE LONG-TERM AND ACUTE-CARE SETTINGS WITHIN THE UNITED STATES

mineral supplements, and 79% were receiving single- or multi-vitamin or mineral supplements (unpublished data). The use of nutritional supplements may complicate the scoring of the following MNA® questions: "How many full meals does the patient eat daily?", "Selected consumption for protein intake", and "Consumes two or more servings of fruits or vegetables per day" (18). If the liquid protein, energy supplement is used as a meal replacement, is it scored as a "meal" on the MNA®? What if the supplement is consumed between meals? For selected protein consumption, does a nutritional supplement containing protein count as one serving of milk for every 8 g of protein? If 100% of vitamin, mineral and fiber needs are provided by the nutritional supplements, does this equal two or more servings of fruits or vegetables per day?

Tube feedings and parenteral nutrition are also used fairly often in U.S. nursing homes and may complicate scoring the MNA®. National MDS data show that 7% and 8% of nursing home residents with cancer receive enteral tube and parenteral feedings, respectively (19). Additionally, more than 30% of residents with severe cognitive impairment and approximately 25% of residents with pressure ulcers receive tube feedings (9, 20). MNA® questions regarding dietary intake that posed a problem for scoring the MNA® for elders consuming nutritional supplements will also be difficult to score when nutrients are parenterally or enterally tube fed. An additional question that would be difficult to score includes: "Mode of feeding – unable to eat without assistance or self-fed". When 100% of nutritional needs are provided via parenteral or enteral tube feedings, the inability to eat without assistance becomes irrelevant to current nutritional status. The MNA®-SF or the full MNA® may be useful in screening and assessing nutritional status of nursing home residents within the U.S.; however, more research is required to address these situations common to the U.S. nursing home population (21).

Other long-term care settings

Other long-term, elder-care settings include the skilled nursing or subacute-care and assisted living facilities. The skilled nursing and subacute-care facilities are required to assess patient risk upon admission using the MDS. Patients are generally admitted to these units directly from an acute-care facility for a determined course of treatment, such as rehabilitation, and then discharged to home or to long-term care. Thomas et al. (22) examined the prevalence of undernutrition in a subacute-care facility and found that 29% of the patients aged 33 to 96 years (mean age 76 years) were malnourished according to the MNA®, and greater than 90% of the patients were classified as either malnourished or at risk for malnutrition upon admission to the subacute unit. The length of stay was 11 days longer for those patients classified as malnourished versus at risk for malnutrition. Additionally, 25% of the malnourished versus 11% of the well nourished were readmitted to an acute-care facility (22). Early identification of nutritional risk followed by intervention may result in a better discharge outcome for patients admitted to a

subacute-care facility (23). The MNA® may be helpful in this process.

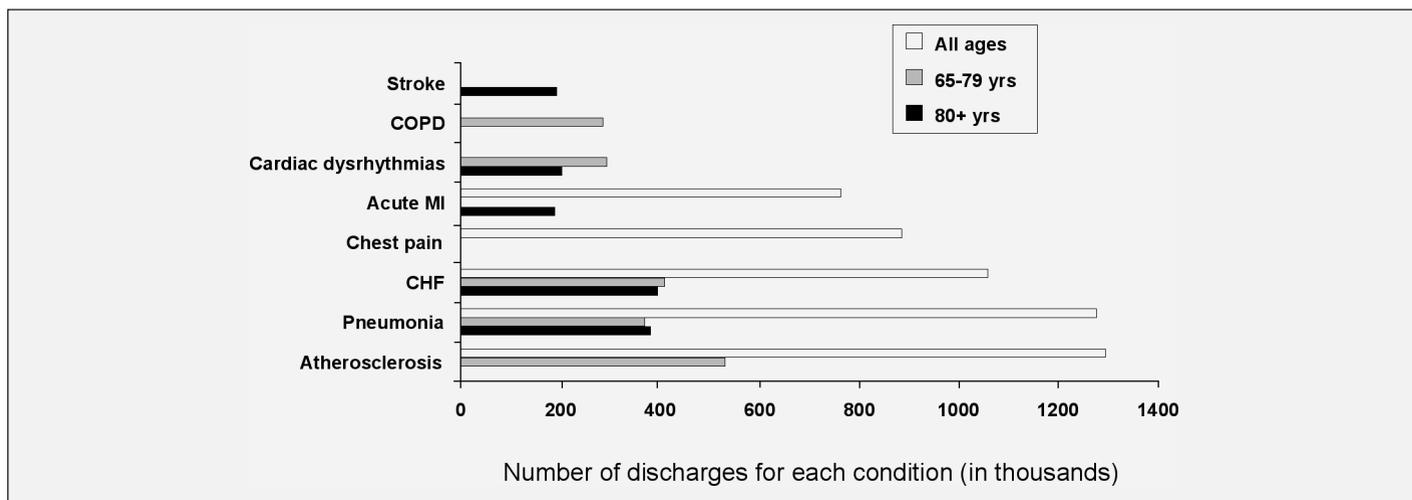
The MNA® may be most useful in the assisted living facility. Assisted living facilities are licensed and regulated by the state in which they operate. In 2004, there were more than 36,000 licensed assisted living or board and care facilities with more than 900,000 beds and probably many more unlicensed assisted living facilities within the U.S. (24). In most instances, elders must pay for assisted living care using their own resources (25). Medicare does not pay for care; however, in some states Medicaid may support some expenses related to care within an assisted living facility. Services typically provided by the assisted living facility include 24-hour awake staff, medication management, meals, housekeeping, laundry, and transportation (24). Elders may not be eligible for or may be transferred out of assisted living care if cognitive impairments become moderate or severe or they cannot demonstrate independent activity, need help with transfers, or require skilled nursing care (24). Thus, maintaining functional status is key for elders in assisted living. Because malnutrition is associated with loss of lean body mass and function, a routine nutrition screening and assessment using the MNA® followed by intervention would be of value to those elders in assisted living care; however, paying for the nutrition screen, assessment, and intervention may present a problem.

Acute-care settings

It is estimated that up to 60% of elders admitted to acute-care facilities or hospitals are malnourished (26). The acute illness as well as limited nutrient intake during hospitalization further deteriorates nutritional status contributing to a higher risk of mortality (3). In most accredited U.S. hospitals, patients must be screened for nutritional risk within 24 hours of admission to the facility. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO), the largest voluntary accrediting organization for hospitals, requires this standard of care for hospitals seeking accreditation. JCAHO does not specify the elements of the nutrition screen or the process by which the nutrition screen is conducted. Each acute-care facility implements the nutrition screening process that works best for their system. For any screening form to be useful in an acute-care setting it would need to be quick and easy to administer. In this regard, the MNA®-SF may be of value. However, the MNA® and MNA®-SF were designed and validated for use with elders. Patients of all ages are admitted to hospitals. The mean age of patients at the time of admission to U.S. hospitals is about 48 years; however, a disproportionate number of elders are admitted annually (27). Adults 65 years of age or older represent 12% of the U.S. population, but they account for 35% of admissions to acute-care facilities (27). The principal diagnoses at discharge are shown in Figure 1. Although elders may have a longer length of stay once they are admitted to the acute-care facility (average length of stay for ≥65 years of age is 5.7 days), they

Figure 1

Top five principal diagnoses by age group at discharge from an acute-care facility within the United States in 2002 (27). Discharge diagnoses related to childbirth (e.g., newborn infant and trauma due to childbirth), which accounted for close to 5 million discharges in 2002, have been excluded. Abbreviations: myocardial infarction, MI; chronic obstructive pulmonary disease, COPD; congestive heart failure, CHF



still only represent a portion of the admissions (28). If the MNA®-SF were to be used to screen for nutritional risk for elders, this would mean that other screening tools would need to be used for other age groups or the MNA®-SF would need to be validated for use with younger populations. Multiple screening tools may become cumbersome to use considering the average length of stay for all diagnoses and all ages (excluding newborn infants) is 4.8 days (28). The full MNA® may be of more value as a quick follow-up assessment tool once elders have been identified as “at nutritional risk” by a more general screening process used for the diverse population being admitted to the acute-care facility.

Another factor that must be considered before implementing the MNA® as a screening or assessment tool in the acute-care setting is the acute nature of the illness or injury. ESPEN, the European Society for Clinical Nutrition and Metabolism, designed a screening tool, the Nutrition Risk Screen - 2002, for use in the acute-care setting (5). This tool places emphasis on impaired nutritional status and the impact of acute illness or injury and treatment on nutritional requirements. The MNA®-SF addresses acute disease (i.e., “Has suffered psychological stress or acute disease in the past 3 months”) but does not place special emphasis on acute illnesses or injuries that specifically accelerate nutritional deterioration by increasing nutrient needs or decreasing dietary intake. However, the MNA® would provide insight on the nutritional status of the elder prior to admit, which would be important for determining how aggressively to apply nutrition interventions.

With the disproportionate number of elders admitted to acute care, the MNA® may be of value. However, another screening tool would be required for patients less than 65 years of age to fulfill the JCHAO nutrition screening requirement.

Additionally, illnesses and injuries that are associated with the hypermetabolic state or decreased dietary intake may need to be identified by another screening process.

Conclusion

Identifying those elders at nutritional risk and providing the appropriate intervention may help preserve quality of life. The MNA®, which has been validated in long-term care settings outside the U.S. (29), may be useful in this process. However, before using the MNA® in nursing and acute-care facilities within the U.S., validation studies will need to be carried out because validity may be affected by the acuity of illness of the residents or patients, the use of aggressive nutrition support, which makes the scoring of the MNA® difficult, and the age of patients admitted into acute care. Additionally, in most long-term care settings, a specific screening tool (MDS) is already required. The MNA® may be more useful in an assisted living facility, where nutrition screening and assessment tools are not currently in place, yet maintenance of functional status is important to prevent transfer to a nursing facility.

References

1. Covinsky KE, Martin GE, Beyth RJ, Justice AC, Sehgal AR, Landefeld CS. The relationship between clinical assessments of nutritional status and adverse outcomes in older hospitalized medical patients. *J Am Geriatr Soc.* 1999;47:532-538.
2. Compan B, di Castri A, Plaze JM, Arnaud-Battandier F. Epidemiological study of malnutrition in elderly patients in acute, sub-acute and long-term care using the MNA®. *J Nutr Health Aging.* 1999;3:146-151.
3. Sullivan DH, Sun S, Walls RC. Protein-energy undernutrition among elderly hospitalized patients: a prospective study. *JAMA.* 1999;281:2013-2019.
4. Sullivan DH, Bopp MM, Roberson PK. Protein-energy undernutrition and life-threatening complications among the hospitalized elderly. *J Gen Intern Med.* 2002;17:923-932.
5. Kondrup J, Allison SP, Elia M, Vellas B, Plauth M. ESPEN guidelines for nutrition

USEFULNESS OF THE MNA® IN THE LONG-TERM AND ACUTE-CARE SETTINGS WITHIN THE UNITED STATES

- screening 2002. Clin Nutr. 2003;22:415-421.
6. Guigoz Y, Vellas BJ, Garry PJ. Mini Nutritional Assessment: a practical assessment tool for grading the nutritional state of elderly patients. Facts Res Gerontol. 1994;15:59.
 7. Guigoz Y, Lauque S, Vellas BJ. Identifying the elderly at risk for malnutrition. The Mini Nutritional Assessment. Clin Geriatr Med. 2002;18:737-757.
 8. Donini LM, Savina C, Rosano A, et al. MNA® predictive value in the follow-up of geriatric patients. J Nutr Health Aging. 2003;7:282-293.
 9. Hudgens J, Langkamp-Henken B, Stechmiller JK, Herrlinger-Garcia KA, Nieves C, Jr. Immune function is impaired with a Mini Nutritional Assessment score indicative of malnutrition in nursing home elders with pressure ulcers. JPEN J Parenter Enteral Nutr. 2004;28:416-422.
 10. Murasko D, Weiner P, Kaye D. Association of lack of mitogen-induced lymphocyte proliferation with increased mortality in the elderly. Aging: Immunology and Infectious Disease. Vol 1. New York: Mary Ann Liebert, Inc.; 1988:1-6.
 11. Lauque S, Arnaud-Battandier F, Mansourian R, Guigoz Y, Paintin M, Nourhashemi F, Vellas B. Protein-energy oral supplementation in malnourished nursing-home residents. A controlled trial. Age Ageing. 2000;29:51-56.
 12. Gazzotti C, Arnaud-Battandier F, Parello M, et al. Prevention of malnutrition in older people during and after hospitalisation: results from a randomised controlled clinical trial. Age Ageing. 2003;32:321-325.
 13. Lauque S, Arnaud-Battandier F, Gillette S, et al. Improvement of weight and fat-free mass with oral nutritional supplementation in patients with Alzheimer's disease at risk of malnutrition: a prospective randomized study. J Am Geriatr Soc. 2004;52:1702-1707.
 14. Jones A. The National Nursing Home Survey: 1999 summary. National Center for Health Statistics. Vital Health Stat. 2002;13:1-125.
 15. Won A, Morris JN, Nonemaker S, Lipsitz LA. A foundation for excellence in long-term care: the Minimum Data Set. Ann Long-Term Care. 1999;7:92-97.
 16. Centers for Medicare & Medicaid Services. Minimum Data Set (MDS) - Version 2.0. May, 2005. Available at: <http://www.cms.hhs.gov/NursingHomeQualityInits/downloads/MDS20MDSAllForms.pdf>. Accessed June 15, 2006.
 17. Suominen M, Muurinen S, Routasalo P, et al. Malnutrition and associated factors among aged residents in all nursing homes in Helsinki. Eur J Clin Nutr. 2005;59:578-583.
 18. Nestle Nutrition Services. MNA® Mini Nutritional Assessment. Nestle. 1998. Available at: http://www.MNA-elderly.com/practice/forms/MNA_english.pdf. Accessed June 15, 2006.
 19. Johnson VM, Teno JM, Bourbonniere M, Mor V. Palliative care needs of cancer patients in U.S. nursing homes. J Palliat Med. 2005;8:273-279.
 20. Mitchell SL, Teno JM, Roy J, Kabumoto G, Mor V. Clinical and organizational factors associated with feeding tube use among nursing home residents with advanced cognitive impairment. JAMA. 2003;290:73-80.
 21. Hudgens J, Langkamp-Henken B. The Mini Nutritional Assessment as an assessment tool in elders in long-term care. Nutr Clin Pract. 2004;19:463-470.
 22. Thomas DR, Zdrowski CD, Wilson MM, et al. Malnutrition in subacute care. Am J Clin Nutr. 2002;75:308-313.
 23. Visvanathan R, Penhall R, Chapman I. Nutritional screening of older people in a subacute care facility in Australia and its relation to discharge outcomes. Age Ageing. 2004;33:260-265.
 24. Mollica R, Johnson-Lamarche H, National Academy of State Health Policy. State Residential Care and Assisted Living Policy: 2004. U.S. Department of Health and Human Services. March 31, 2005. Available at: <http://aspe.hhs.gov/daltcp/reports/04alcom.htm>. Accessed June 15, 2006.
 25. Consumer Consortium on Assisted Living. Available at: <http://www.ccal.org/>. Accessed June 15, 2006.
 26. Mowe M, Bohmer T, Kindt E. Reduced nutritional status in an elderly population (> 70 y) is probable before disease and possibly contributes to the development of disease. Am J Clin Nutr. 1994;59:317-324.
 27. Merrill CT, Elixhauser A. Hospitalization in the United States, 2002, HCUP Fact Book No. 6. Vol Publication No. 05-0056. Rockville, MD: Agency for Healthcare Research and Quality; 2005.
 28. DeFrances CJ, Hall MJ, Podgornik MN. 2003 National Hospital Discharge Survey. Advance Data from Vital and Health Statistics, CDC. July 8, 2005. Available at: <http://www.cdc.gov/nchs/data/ad/ad359.pdf>. Accessed June 14, 2006.
 29. Bleda MJ, Bolibar I, Pares R, Salva A. Reliability of the Mini Nutritional Assessment (MNA®) in institutionalized elderly people. J Nutr Health Aging. 2002;6:134-137.

DISCUSSION

Bruno Vellas, MD, Toulouse University, Toulouse, FR: *Concerning long-term care, when we visit long-term care in Europe or in the US, they are usually very similar. The patients are the same and the problems are the same. For those reasons, solutions that we have in Europe for using the MNA® could also be adopted for the US. Concerning tube feeding, tube feeding is an interesting question. We think we need to do the MNA® as part of a nutritional assessment before starting the tube feeding. Usually when we have a patient, we need to do a nutritional assessment before the tube feeding. The MNA® is indicated as part of the nutritional assessment that must be done beforehand and is part of the discussion to decide whether we need to use tube feeding or not. For the follow up, I am not sure whether the MNA® will be useful for patients with tube feeding for the follow-up. It would be very helpful on entry before you make a decision on the indication of tube feeding. Concerning people with severe dementia, so many publications show that tube feeding is not useful in this population. I think the aim must be to decrease the percentage of patients in the US with severe dementia on tube feeding. It may be a good time to do palliative care in this population with severe dementia instead of tube feeding. There have been so many publications in the New England Journal of Medicine and in JAMA (Journal of the American Medical Association) that show that tube feeding is painful and not useful for people with severe dementia.*

Bobbi Langkamp-Henken, PhD, University of Florida, Gainesville, FL, USA: *Just to comment on that, I would agree that I have seen a lot of articles lately saying not to use tube feedings for patients with dementia. However, I saw a very interesting paper by Mitchell (JAMA 2003;290:73-80) that suggested that tube feeding may be used in patients with dementia as a cost-saving measure. Labor costs would be lower when tube feeding patients with dementia than when hand feeding them. Also, Medicare and Medicaid may reimburse for tube feeding but they do not give you additional money to help with staff costs associated with hand feeding.*

Bruno Vellas: *That is the same in France and in Europe. There are, however, so many publications that show that mortality and morbidity increase when we use tube feeding in this population.*

Kathleen Niedert: *The other issue is quality of life. I recently attended a large seminar on end of life care. The quality of life is based on socialization. In the tube fed patient, it is very easy to go in, hang a feeding, check to make sure it is dripping and walk out of the room. When you spend an hour with the patient to get the food into them, you are holding their hand, talking to them. They do so much better. The other issue I wanted to bring up is the following. In your data you talked about patients who were receiving supplements. Receiving or consuming?*

Bobbi Langkamp-Henken: *That is probably the million-dollar question.*

Kathleen Niedert, RD, Western Home Communities, Cedar Falls, IA, USA: *That makes a lot of difference for the data.*

Bruno Vellas: *You can still use the MNA® for this population. We do not always know if they respond correctly to the question of whether they took the supplement. Concerning acute care, it seemed to me that the main problem is the detection of malnutrition in elderly people coming to acute care. We need a tool to see if we can improve the nutritional status in a few days. Usually it is very difficult to improve the nutritional status of this population in a few days. What is important to be able to detect malnutrition. In acute care the purpose of the MNA® is to detect and screen for malnutrition. You have patients that leave acute care after a few days, but you can still give some information for intervention to*

THE JOURNAL OF NUTRITION, HEALTH & AGING©

the general practitioner. You can share all the necessary information in a letter to him.

Antonio Salva, MD, Barcelona University, Barcelona, ES: Just to comment on some questions. Maybe there is a difference between US nursing homes and European nursing homes related to nutrition. You have a mandatory strategy to assess the risk of malnutrition. We do not have this. We have patients who are undernourished but no mandatory strategy to identify them. We are looking for better strategies, and maybe MNA® is one of them. The patients who are being tube fed or get a supplement, is that a consequence of the assessment or as a consequence of the failing of the nurse or the doctor? The strategy is nice if the tube feeding or the supplement is the answer to the real nutritional situation. Then you have a good strategy. If it is not, maybe you need to review this.

Bobbi Langkamp-Henken: I see what you are saying. Did they assess the patient and then put them on a supplement? I guess this becomes important when we are going to re-assess them. After they have been on tube feeding for three months, or receiving the supplements between meals for three months, we want to use the MNA® to see whether we made a difference. Should we not score those questions a little differently, e.g. the number of meals consumed, or fruits and vegetables or whatever? If you don't, you may not see the improvement.

Pam Charney, PhD, Nutrition Consultant, Seattle, WA, USA: Just for clarification, earlier in your talk you said when patients are admitted to a nursing home, they have to be screened within two to three days and that screening includes the Minimum Data Set (MDS). Following that there is a 30-day window to complete an assessment based on the results of that screening? Is that correct?

Bobbi Langkamp-Henken: That was the recommendation of the American Society of Parenteral and Enteral Nutrition's 2006 Long-term Care Standards to screen within two to three days. Maybe Dr. Thomas can answer what the requirement for completion of MDS is.

David Thomas, MD, Saint Louis University, St. Louis, MO, USA: I can answer that and then ask a question, also. In nursing homes we have a seven day window to complete the MDS. The MDS contains nutritional information and serves as sort of a screen for that. Then, there is a requirement that weight be screened every month. The trigger for re-assessment of the nutritional status is based on weight.

Bruno Vellas: And you do it each month?

David Thomas: Yes. Since we are on the subject, I can tell you that we weigh people accurately in nursing homes. It is a myth that patients are not routinely weighed in nursing homes. We are required and we have a sheet of paper that has everybody's weight on it every single month. If anybody misses the mark by 5 %, we have to do an intervention. We are within 5 % accuracy, because if it is more than 5 %, we have to go back and re-weigh them. Does this answer the question?

Pam Charney: I think that does answer my question. For clarification, from admission to getting the MDS completed, even if they are screened or if the MDS indicates that there is some risk, the next check does not have to be done for thirty days?

David Thomas: It works like this. The rule says that you have seven days to do an initial MDS. Based on the MDS you have to complete a RAI, which is a Resident Assessment Instrument. If you trigger on that, then that has to be followed more closely. You have to repeat the MDS every time the patient has a change in condition. That means that they either went to the nursing home or went to the hospital or got sick or got pneumonia or quit eating or whatever it is. For any change in condition, you have to do another MDS, which gives you another opportunity to trigger the RAI. We monitor the weights every 30 days. In other settings, the recommendation may be weekly. Part of the recommendation that Bobbi talked about had to do with clinical practice guidelines. Most of those were in acute care. The recommendations in acute care may be within two to three days. I think it is even 24 hours in some settings.

Kathleen Niedert: We are required to see the residents for likes and dislikes and get their weight and their height in the first 24 hours after admission. I can tell you that in my facility we are very regimented. What happens is that we trigger these people right away because we see what they are eating. We also do a seven-day intake on those residents to see how they are eating. That does not mean that every nursing home in the nation does that. I think if you look at statistics, you can almost see the states where the most frequent use of tube feeding occurs. If you look at quality of care and you look at the nursing home comparisons on the government website, you can see which states give better care. Some of those states that use more tube feedings for their residents do not necessarily provide better care to their residents.

Janet Skates, MS, Nutrition Consulting Services, Kingsport, TN, USA: As a follow-up on your comment about acute care, it is mandatory that you screen all admissions within 24 hours if your hospital, like most, is accredited by JCAHO (Joint Commission on Accreditation of Healthcare Organizations). If you have a short length of stay, you are turning your patients over very rapidly. Therefore, you have to have a quick screening mechanism that will identify those patients who need a complete assessment as they walk in the door, and a nurse has to be able to do it. I think that is a huge potential use for the MNA® in an acute care setting. Would you use it later, after admission? No, unless you have patients who have surpassed their average length of stay and it is time to re-screen them to see if they have developed some kind of risk since admission. I think there is certainly a potential use for it or some adaptation in an acute care setting.

David Thomas: Two comments. One is that I do not think the MNA® was ever intended to be used for follow-up. It has never been studied that way. Look at the questions in terms of the factor analyses. If you eat fresh fruit and vegetables one time, you have to answer that question the same way the next time. There is just not enough sensitivity to change in this tool. I do not think it was ever intended to do that.

Second comment is that I think we need to be careful to sometimes flip the question around. We always talk about identifying undernutrition and identifying people at risk. Another way to do this, and the way we do it, is to identify normal nutritional status. If you do the screening, then this means now there are people that you can ignore. Not that we are going to ignore anybody. However, these are people that you do not have to focus on. Therefore, I think the value of this instrument is to point out people that you need to pay more attention to. I know you said that in your original article, Bruno, that this is to identify people who you want to focus your attention on. In fact, after you do the MNA®, you might then want to get some blood tests. It will save you an enormous amount of effort by identifying people who are not at risk.

Cameron Chumlea, PhD, Wright State University, Dayton, OH, USA: I agree with Dave that the MNA® is not designed to measure change. If you want to design instruments that measure change then this is a completely different animal. Bobbi, let me ask you a question. Let us assume this was a perfect world and you had an instrument that would allow you to screen within a long-term care setting. What are you going to do with that information? To me it sounds like you already have a mechanism that at least identifies people, that does this process. I recognize you want to identify these people, but I do not know if you are really just adding more paperwork? That is unclear to me.

USEFULNESS OF THE MNA® IN THE LONG-TERM AND ACUTE-CARE SETTINGS WITHIN THE UNITED STATES

Bruno Vellas: *The interest of the MNA® is to target the patient that will need more follow-up and more assessment.*

Cameron Chumlea: *What would you get, that is what I would like to know. That was not clear, maybe I missed it.*

Bobbi Langkamp-Henken: *Let me answer the question in two ways, one as a registered dietitian and one as a researcher. As a registered dietitian, I would not care whether or not supplements are included because I would use my clinical judgement and I would score those questions appropriately. My intervention would be appropriate to the different parameters that I had identified that were contributing to the risk of malnutrition. As a researcher, where everything has to be reproducible and everyone wants to know how you are scoring people and whether or not they are malnourished, this becomes more of an issue. Maybe it is the researcher in me that is saying we need to define how to score tube feedings on the MNA®. I want to use this tool to pull out the malnourished patients and look at immune function. As a clinician, I think the tool is just great.*

Pat Anthony, MS, RD, Nestlé Nutrition, Vevey, CH: *My point is, are we trying to make the MNA® an assessment tool? Even though it is termed the 'Mini Nutrition Assessment', to me it is a screening tool. The way I understand it is that it should identify those patients that need to be tube fed. If they are already being tube fed, they need a nutrition assessment, not a nutrition screen. I am wondering whether we are trying to use this for more than it is really made for. That goes back to the question we had very much at the beginning. Is the MNA® a surveillance tool? To me, a surveillance tool is an assessment tool. It tells me where I am and where I should be going. Assessment should be more sensitive to nutritional change, whereas a screening tool is supposed to tell me who I need to look at more and who I can ignore.*

Cameron Chumlea: *An assessment tool measures change, a screening tool does not.*

Pat Anthony: *And I think that also goes back to what Janet was saying as far as a simple screening tool that could be done. That is how I understand it was developed. I do have one question and I sort of think you may have answered that. It goes back to what Pam was saying. If you were to use the MNA® in long-term care in the US, is it going to give you more information than the MDS already does? Cameron, I think as you highlighted the questions that are on the MDS, your comment was, 'Most of them are on the MNA®.' As much as I would love to have people using the MNA®, if it is not going to add more information, then why do it?*

Janet Skates: *From my standpoint, the value of the MNA® in a long-term care facility is to identify which patient the dietitian needs to get to see quickly. Many nursing homes use CDMs (Certified Dietary Managers) or Dietetic Technicians to address nutrition. You need to identify which patients your dietitian needs to see quickly to do a more in-depth nutrition assessment. I think that is the value of using that type of screening in a long-term care facility.*

Pat Anthony: *What you are saying is that you do think it would add increased value over the MDS. That is the question I was asking.*

Janet Skates: *Over the MDS? Yes. I think it would allow you to help prioritize which patients you get your consultant dietitian to see. Most long-term care facilities in the US only have a consultant dietitian available a limited number of hours.*

Gordon Jensen, MD, Vanderbilt University, Nashville, TN, USA: *What is it though that is on the MNA® but not in MDS that is going to get that added value?*

David Thomas: *It is a little bit different than that. The issue is, on the MDS there are a number of parameters which are spaced out through the MDS in different areas and not in a single set. There is no way to add those up and to come up with a score. They are triggers to a resident assessment. While there are similarities between this list and what is on the MNA®, the MDS data has never been looked at or compared. It has never been looked at in terms of prediction of mortality, prediction of nutrition, prediction of immune function or other prediction. Nobody looks at the MDS except the surveyors. None of the clinicians do. I do not know whether I could find one or not. The other thing I think that is very critical for us to understand is that when you get a tool that went through the process that Bruno and Yves went through, the tool itself cannot be altered. It functions as a whole. Its prediction and its mortality and relevance are all of a cut cloth. I do not particularly like some of these questions and I wish you guys had done it differently. I would have done it differently. Nevertheless, no matter what I think, it has to be exactly this way. Otherwise it will lose its way.*

Riva Touger-Decker, PhD, RD, University of Medicine & Dentistry of New Jersey, Newark, NJ, USA: *Commenting on what you just said and that is where I wanted to go, to my knowledge the MDS has never been validated as the predictor of anything in the nutrition tools. We just did a study looking at the oral health component of the MDS tool and we know that in the setting we used it (a skilled nursing facility) it is not predictive of the patient's oral health. I think that brings up an issue. If we as practitioners are using the MDS in a long-term care setting, we would be better off doing stage 1 of the NCP (nutrition care process). Particularly when you are measuring mid-arm circumference and calf circumference in a cognitively impaired patient, it may be a challenge to apply the whole tool. I dare say you are going to get more specific there as a screening mechanism than you would with the MDS tools that would trigger the nutrition assessment. I would probably ask Pam or Annalynn to comment, but I would think that this fits in more nicely with what you said earlier, Pat, to the stage one of the nutrition care process that sets the tone for assessment that then sets the tone for diagnosis.*

Pam Charney: *It would be interesting to compare the MNA® to the data that is collected on the MDS. I agree that the MDS has never been validated and it is not routinely used except for Medicare. If we are collecting some of the same information in both tools, we also have to remember that within 10 years we are going to electronic charting. With that system, you could collect and pool the data and have a score generated. The informatics people could set that up for you. The big packages, like Cerner and MEDITECH, already have that information available. The bigger question though is what Riva said, to look at validating the information that comes from the MDS, and see if the MNA® information adds to or subtracts from it. Also how do we pool this information and make it easier for people with limited staffing determine who needs to be seen.*

David Thomas: *That has been looked at and the MDS has been well-studied. Bobbi, you may want to make a comment on that too. It turns out that this data is superbly bad. It has no interrater reliability. The problem is that it is done by different people who mean different things and have different training. Therefore, it is difficult to use it across different settings.*

Annalynn Skipper, PhD, Nutrition Consultant, Chicago, IL, USA: *We have two different strands of thoughts here. The purpose of the MNA® is to detect malnutrition and, as I understand, malnutrition alone. The MDS is an attempt to triage the patients who may need to be seen*

THE JOURNAL OF NUTRITION, HEALTH & AGING©

for other reasons. We have 'leaves 25 % of the food', 'needs a special diet' or another reason to be seen by a dietitian. That is where things get really murky. We have validated nutrition screening parameters that could be simplified and streamlined. We also need to simplify some of these other things. For example, if we are going to liberalize diets, do we need to see everybody on a therapeutic diet? Probably not. To me, the entire process needs to be simplified, not just the MNA®, if it can be.

Antonio Salva: I would like to move for just a minute to Europe, where we do not use the Minimum Data Set. Before that, another comment to this discussion about the Minimum Data Set and MNA®. It would be interesting to compare the two strategies. Not only to compare data, however, also to compare in a realistic way. If we use another system with the MNA®, for example, can we change attitudes? If not, if that result is the same, then maybe it is not important. Maybe it would be interesting to have this information; one with all the Minimum Data Set strategies as you usually use and another adding the MNA®. In Europe, or in Spain at least, we do not have this strategy. We do not use the Minimum Data Set. One discussion we had is about screening. There were two ideas. One was to use the MNA®. Another one is to start the screening by the dietetic intake and to use the MNA® after the dietetic intake. If the dietetic intake is low, you then use the MNA® and other assessments. What do you think about this discussion?

Pam Charney: A problem with a system like that, at least in the United States, is the short average length of stay (4.8 days). If we screen using a very quick system on admission and then we wait a couple of days to do the MNA®, we are two thirds through the admission and still have not done any sort of intervention. By the time your system gets things rolling, the patient may be heading out the door before you do any sort of intervention in an acute care setting. Kathleen is more of an expert on how that works in sub acute care and long-term care. In an acute care setting, especially as a former clinical manger, we could not make this a two-stage process. It has to be fast and simple and happen at admission. Then somebody can intervene on this patient fairly quickly.

Gordon Jensen: Two comments. I think the biggest impediment to implement some form of MNA® screening in the nursing home is that there is actually nobody who is going to do it. It is certainly not going to be a dietitian. The nurses are too busy responding to the MDS data set. I honestly do not even see the short screen being translated into action. It would have merit; it is just not clear who would do it. Another quick comment on the acute care setting, so that everyone understands where we are at in the United States today. In big teaching hospitals, the people doing the intake screening and nutrition screening are the nurses and nurses aides. Typically they are using simple two, three, four item screens. In our hospital the screens are computer based. Many staff would actually view this six item short MNA® as too cumbersome.