NUTRITIONAL SCREENING TOOLS – HOW DOES THE MNA® COMPARE? PROCEEDINGS OF THE SESSION HELD IN CHICAGO MAY 2-3, 2006 (15 YEARS OF MINI NUTRITIONAL ASSESSMENT)

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Abstract: Malnutrition occurs frequently in the elderly and is correlated with decreased functionality and thereby quality of life, as well as increased morbidity and mortality. This holds true for elderly people living in the community, patients in acute-care hospitals, as well as residents in long-term care facilities. To diagnose malnutrition, it is crucial to have sensitive, easy-to-use and specific tools at hand. The focus of this article is to compare strengths and weaknesses of the most commonly used assessment tools for malnutrition in the elderly, Malnutrition Universal Screening Tool (MUST), Mini Nutrition Assessment (MNA®), Subjective Global Assessment (SGA), and Nutrition Risk Screening (NRS 2002). In conclusion, 15 years after its introduction, the Mini Nutritional Assessment (MNA®), which was especially developed for elderly people, remains the gold-standard for ambulatory living elderly and those living in long-term care facilities, whereas the NRS 2002 has especially good potential in the acute-care setting, as it was developed specifically for hospitalized patients who need nutritional support.

Key words: Malnutrition, elderly, geriatrics, Malnutrition Universal Screening Tool, Subjective Global Assessment, Mini Nutritional Assessment, Nutritional Risk Screening 2002.

Introduction

The relevance of malnutrition in the elderly is exemplified by an increased morbidity and mortality in the malnourished. The European SENECA study showed that weight loss in a group of independently living persons is associated with significantly increased mortality when compared with those with stable or even slightly increased weight (1). Similar associations exist for nursing-home residents and hospital patients (2, 3).

Whereas the prevalence of malnutrition for free living elderly in most European countries lies between 5-20%, the percentage increases rapidly in the hospitalized elderly and in those living in nursing-homes. Here, the number for the first group is 19-65% and for the latter 29-74% (4). Similar numbers can be found for the United States of America (5, Table 1).

Table 1
Prevalence of malnutrition in the elderly

Population	% Malnourished
Community dwelling elderly populations	
• Mobile elderly	5 – 12 %
• Medical outpatients, frail elderly	11 – 20 %
Nursing home patients	23 – 85 %
Hospitalized patients	32 – 50 %

(after Thomas DR et al. – Ref 5)

Although malnutrition is a common problem in the elderly, the definitions of malnutrition differ significantly between authors and study groups. The results of the different published studies should therefore be viewed with caution. Moreover, when using the BMI as a parameter to define malnutrition, it is crucial to note that the cut-offs drastically change the incidence of malnutrition, as shown by Volkert (6, Table 2).

Table 2
Cut-offs for BMI are key for incidence numbers published for malnutrition in the elderly

BMI <18
• Malnutrition in 9%
BMI <22
• Malnutrition in 40%

(after Volkert D et al. – Ref 6)

What is malnutrition in the elderly?

To understand malnutrition in the elderly, we should differentiate the three terms: anorexia, sarcopenia, and cachexia (7, 8). Lack of an appropriate intake of calories leads to weight loss and, finally, anorexia with a primary loss of fat mass. Sarcopenia (see also below), on the other hand, is a more selective loss of muscle mass due to diminished physical activity and/or protein malnutrition. This goes along with decreased functionality, for example increased risk for falls. Sarcopenia is therefore part of the frailty syndrome of the elderly. Finally, cachexia encompasses the weight loss seen in

anorexia and the wasting seen in sarcopenia and, thus, is characterized by progressive loss of both fat and muscle masses.

Measuring weight changes, daily caloric intake or even body mass index (BMI) does not provide information about body composition, yet linking body composition with assessment tools is crucial in the elderly. This is best done by the MNA®, as shown later, as it also measures calf-circumference. A calf-circumference of less than 31 cm is a sensitive sign for existing malnutrition and sarcopenia.

Aging is associated with a progressive depletion of lean body mass and muscle mass in particular (9, 10). This is a phenomenon of aging starting at the age of 45 years (11), with a 50% loss of muscle mass seen by the age of 90 years unless specific preventive strategies are taken (12,13).

While loss of muscle mass is a natural phenomenon of aging, great differences exist between individuals (14). Sarcopenia and body shape changes can, therefore, be understood as part of the normal aging process, where a healthy protein-rich diet and regular physical exercise still seem to be the best preventive strategies (15). From a functional point of view, strength is more important than merely the muscle mass when mortality is the primary end-point (16). Clinically, sarcopenia becomes a problem when it reaches a stage where it interferes with functionality and the ability to perform activities of daily living (17). It then becomes part of "nutritional frailty" and is a trigger for morbidity and even mortality in the aged. To this extent, functionality in obese elders is diminished to the same extent as in the non-obese, but frail, elderly (18).

Taken together, it is crucial to have assessment tools at hand that can diagnose those elderly who are malnourished or at risk for malnutrition with sensitivity and specificity. This is the only way to ensure that interventional therapies are started early. These tests must address the following parameters and end-points:

- Risk for functional problems
- Risk for hospitalization
- Risk of death (mortality)

In addition, screening for malnutrition and nutrition assessment will have little impact if screening and assessment are not followed by adequate intervention and monitoring. Screening is not done merely to identify potential problems. Rather screening and assessment are prerequisites to designing nutritional interventions, such as supplements, that will be covered by insurance companies. The sequence must therefore be:

- Screening
- Assessment
- Intervention
- Monitoring

When analyzing the strengths and weaknesses of malnutrition screening and assessment tools, it is also important to ask to whom the test is targeted. Populations of elderly persons are very diverse and so are their nutritional needs and problems. Table 3 summarizes the groups of persons at stake.

Table 3
Malnutrition screening and assessment tools for different elderly populations

- Elderly living in the community
- Elderly needing social services
- Elderly living in old-people homes
- Elderly living in long-term care
- Elderly coming to acute-care units

From the many existing tools, the strengths and weaknesses of the following screening and assessment tools will be discussed:
- MUST (Malnutrition Universal Screening Tool)
- SGA (Subjective Global Assessment)
- MNA® (Mini Nutritional Assessment)
- NRS 2002 (Nutritional Risk Screening 2002)

Analysis of different screening tools

Malnutrition Universal Screening Tool (MUST)

The MUST test is composed of three domains (19): BMI, weight loss over time and an acute disease parameter for those expected to have a significantly diminished food intake for more than five days. The test was primarily developed for use in the community. The items on the MUST are summarized in Table 4.

Table 4
Items used in the MUST test (Ref 19)

BMI	Score
• BMI > 20	0
• BMI 18.5-20	1
• BMI < 18.5	2

Weight loss in 3-6 months	
• < 5%	0
• 5-10%	1
• >10%	2

Acute disease effect
• Add a score of 2 if there has been or is líkely to be no or little nutritional intake for > 5 days

Summary
• Score of 0: Usual care
• Score of 1: Observe
• Score of ≥2: Treat

A BMI greater than 20 kg/m^2 is considered normal, which is at odds with current thinking where we consider elderly persons

with a BMI less than 22 as already at risk for malnutrition. The MUST tool also has no items to assess functionality, clearly demonstrating that this test was not developed for the elderly population. The test is easy and quick to perform; however, that does not compensate for its drawbacks, especially since the short form of the MNA® has comparable advantages and provides more specific answers for an elderly population.

In summary, the test is not useful in an elderly population, as it is too unspecific. For an easy screening tool, it focuses too much on acute diseases making it less useful in the long-term care setting.

The MUST can be downloaded from http://www.bapen. org.uk/the-must.htm

Subjective Global Assessment (SGA)

The Subjective Global Assessment (SGA) was developed for patients with gastrointestinal diseases, especially those with malignant tumors (20, 21). Its advantages are: it is well documented within the literature, easy to perform, and allows a grading of malnutrition. Its main drawback is that it is subjective as its name indicates. Therefore, it may be helpful at the bedside, but not for research and prospective purposes. It was not developed specifically for the elderly and it grades weight change, dietary intake and acute disease as does the MUST. With regard to acute disease, it focuses on gastrointestinal problems with questions relating to nausea, vomiting, diarrhea and anorexia.

Compared to the MUST, the SGA comprises additional factors such as loss of muscle and fat mass, which are determined subjectively, as well as edema and ascites. It requires special training to administer, which in many countries limits its use to medical doctors only. Therefore, it is impractical in many institutions, making it less useful compared with the MUST. Since the SGA takes longer than the MUST and does not add pertinent additional information, it is no more useful than the MUST from a practical point of view in the elderly.

Mini Nutritional Assessment (MNA®)

The short form (MNA®-SF) provides an easy way to screen elderly patients for malnutrition in less than 5 minutes. If the short form is positive for malnutrition risk, the full MNA® must be completed and takes about 20 minutes. Like the Mini Mental State Examination (MMSE) that is used to score dementia, the MNA® has a maximum score of 30 points. The MNA® is the only malnutrition assessment instrument specifically developed for the elderly (22-25). It takes into account domains not directly linked to food intake, but crucial when dealing with the frail elderly such as functionality (mobility), depression and dementia.

There is a multitude of good retrospective as well as prospective studies using the MNA®, making it a gold-standard test for malnutrition screening and assessment in the elderly. Furthermore, the test has also been used to study the effect of

malnutrition on immune function (30) and other factors for frailty in the elderly such as albumin levels as a morbidity and mortality parameter (26-29). It also shows an acceptable correlation with both dual-energy X-ray absorptiometry and bioimpedance (22).

A drawback of the MNA® is that demented patients may be unable to answer some of the questions themselves. In these cases, proxies have to answer the questions. In addition, the MNA® can not be used in patients receiving enteral nutrition support such as with a percutaneous endoscopic gastrostomy (PEG). The classical MNA® may need to be adapted in the future for these circumstances. In a recent prospective study we did in an acute-care setting of random elderly patients over the age of 65 years (mean age 80.2 years), the MNA® could only be performed in 66.1% of patients compared to 99.2% with the SGA and 98.3% with the MUST (31). The major reasons precluding the use of the MNA® in the acute care setting were the presence of confusion, advanced dementia, serious post stroke aphasia and apraxia, or sometimes even severe acute diseases such as pneumonia (24). Such patients were often excluded from previous studies examining the clinical value of the MNA® (32, 33).

On the other hand, whereas all screening tools showed a significant correlation with the BMI in this study, only the MNA® demonstrated significant correlations to albumin levels, which are highly prognostic for morbidity and mortality in this population (26-29), and to length of hospital stay.

The MNA® can be downloaded from www.mna-elderly.com.

Nutritional Risk Screening 2002 (NRS 2002)

When this "youngest kid on the block" was first published (34, 35), its stated purpose was "Identification of those hospitalized patients, who are malnourished or at risk for malnourishment and who would gain benefit from the improvement of their nutritional situation". Clearly, the NRS is a test for patients in acute-care hospitals and focuses on those who can profit from nutritional support during hospitalization. Again, this test was not developed specifically for an elderly population, and currently there is only limited data on its applicability in the elderly (31).

Similar to the MNA®, the first part of the NRS 2002 is a pre-screening tool. The pre-screening section queries the following: BMI< 18.5 kg/m2, recent weight loss, recent decrease in food intake. The cut-off for BMI of < 18.5 kg/m2 suggests that this test is not focused on an elderly population, because by the time an elderly person's BMI falls to <18.5, successful nutritional intervention is very hard to achieve. Nevertheless, the test tries to overcome this issue indirectly by adding one point to the score for persons over the age of 70 years.

Reflecting its focus on acute disease in the hospital setting, the pre-screen asks if the patient is severely ill (i.e. "ICUish"). Answering yes to only one of the screening questions triggers

the full test to be performed.

The severity of illnesses is scored in the final screening section of the NRS. The strength of this part of the test is that it was based on well-performed studies that demonstrate the efficacy of nutritional support therapies for each disease (34). Conversely, if no data exists supporting the efficacy of nutritional support therapy in the treatment of a specific disease, there is no additional score for disease severity. The NRS is easy to perform and does not include physical examination or anthropometry.

In summary, this newer test shows promise in the acute-care setting, though it may need to be adapted for an elderly frail population. The data is still insufficient to make a clear statement about its usefulness in the elderly compared with the MNA®.

The NRS 2002 can be downloaded from www.espen.org.

Conclusions

- Nutritional assessment should always be part of the Comprehensive Geriatric Assessment (CGA).
- An assessment tool for malnutrition in the elderly should also account for functionality parameters.
- BMI provides no information about body composition (e.g. sarcopenia); nevertheless a BMI<22 kg/m2 puts an elderly person at risk for malnutrition
- The MUST was especially developed to screen people living in the community.
- The SGA was especially developed for patients suffering from gastrointestinal (malignant) diseases.
- The NRS 2002 was especially developed for patients in the acute-care setting.
- Only the MNA® was especially developed for the elderly. It remains the gold-standard today for the following reasons:
  - It is widely used and accepted (like the MMSE for dementia).
  - Short (screening) and extended (assessment) forms are available.
  - The test also includes items for functionality and body composition, making it more useful for geriatricians than all the other available tests so far.
  - Not only does it provide assessment, it also gives prognostic information.
  - It covers the elderly world (persons living in the community, in long-term care setting and also in acute-care facilities).
- If the MNA® can not be performed, the best alternative today seems to be the NRS 2002, especially in the acute-care setting where nutritional support is acutely needed.
- Entering a new phase 15 years after its development, the MNA® will hopefully evolve as needed to meet the challenge of successfully screening and assessing a growing population of elderly, malnourished (demented) patients.

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DISCUSSION

Pam Charney, PhD, Nutrition Consultant, Seattle, WA, USA: *First, thank you for doing an indirect advertisement for ADA's new nutrition care process, which is nutrition assessment, nutrition diagnosis, intervention, follow-up and monitoring. The entry step to that process is the screening, which we have been discussing for the past couple of days. In the United States, we have 24 hours to screen. I am not sure that anyone in the United States would suggest using subjective global assessment as a screening tool. We would probably be more likely to use that as an assessment tool. How does that play out in other care settings? All of my experience is with acute care. I certainly would not compare the subjective global assessment (SGA) to something like the MNA® short form or to the MUST, which I agree has its issues because it uses the BMI. I am not very happy with the acute disease aspect either. How does that play out in other care settings beside acute care in the United States?*

Cornel Sieber, MD, Erlangen-Nürnberg University, Nürnberg, DE: *To be honest, I am not a real fan of the SGA in geriatric medicine.*

Tommy Cederholm, MD, Karolinska University Hospital Huddinge, Stockholm: *It is not easy to understand the difference between screening and assessment. What is assessment? Assessment consists of the evaluation of background factors to see whether there is a disease process, inflammatory situations. We do not need to do an in-depth nutritional assessment. The screening test should be good enough to say whether the patient is malnourished or not. MNA® is definitely that. There should be no further assessment.*

Bruno Vellas, MD, Toulouse University, Toulouse, FR: *Is it mandatory to do a screening, including a nutritional feeding, for every patient in the first 24 hours?*

Pam Charney: *Correct. When a patient is admitted to an acute care setting in the United States, the Joint Commission for Accreditation of Healthcare Organizations (JCAHO) requires that there be a screening that includes nutrition. When nursing admits a patient, they usually go through an eight or ten page form. Nutrition is only a very small part of this. This is why in many acute care settings in the United States, we like to keep the nutrition part as simple as possible to identify those who need to have some sort of intervention.*

Bruno Vellas: *When the nurse thinks that there is a risk of malnutrition, they should direct a clinician or a dietitian to do the MNA®. You do not have to do the MNA® in the first 24 hours, but perhaps in the second stage.*

Pam Charney: *In the acute care setting it is a good tool either as a second step or to base intervention on.*

Cornel Sieber: *When the SGA test was developed, it was not thought of as a screening tool but as an assessment tool.*

Gordon Jensen, MD, Vanderbilt University, Nashville, TN, USA: *The way I have historically tried to discriminate between screening and assessment, is that screening is an approach to assess for risk of a specific outcome. In this case, you can screen for risk for undernutrition or malnutrition. I have always viewed assessment as a more in-depth evaluation to make a diagnosis and to ascertain what the best approach to intervention might be. The MNA® is partly set up to do these things. It has an initial screening, but it is in a grey zone between screening and assessment. Screening and assessment continue to get blurred by healthcare practitioners.*

Cameron Chumlea, PhD, Wright State University, Dayton, OH, USA: *A screening tool has to be two things. It has to be very sensitive and very specific. It does not have to do anything else. It just has to have low false positives and low false negatives. That is all it has to do. It does not really assess risk. It divides people into whether they are healthy or not healthy. The assessment tool can get more into the risk issue because it can detect a little.*

Gordon Jensen: *Look at a screening test; for example, a pap smear. We do not have anything remotely like a pap smear for nutrition or for undernutrition and that is our fundamental problem.. We dance around this all the time. This is why we come up with these multi-variable attempts at screening. We do not have a lab test or specific question that will be highly sensitive and highly specific for identifying undernutrition. The best indicator would be underweight or weight loss, but that is as close as we get.*

Riva Touger-Decker, PhD, RD, University of Medicine & Densitry of New Jersey, Newark, NJ, USA: *The key point is that MNA® itself sits in grey zone. Screening is the MNA® short form, which is a filter, in terms of who needs to intervene, who needs intervention and who does not. Intervention is a full-blown assessment. The MNA® is somewhere in the middle of the screen and the assessment. The MNA® works in a sense like the nutrition screening initiative tools in terms of finding out whom you need to bring in. Do you need to bring in social work? Do you need to bring in physicians? Do you need to bring in pharmacists? Do you need to bring in dietitians? This helps to triage the care, which is important. What we see here is a tool that will change in its interpretation depending on where we put it. Importantly this has been validated. It is not broken, but it needs to be updated for 2006. Perhaps it needs reshaping in terms of the various settings in which we now need to use it. I do not know that you can use only one setting or that there is one tool, which can be used in every setting.*

Antonio Salva, MD, Barcelona University, Barcelona, ES: *Usually we use screening tools when we want to identify a very small population. When we have a very big population and we know that only a very small part of that population has a condition, then we use a screening tool. The short form was validated to operate in the community, where the percentage of people with malnutrition was very low. In the nursing homes, it is not necessary to have this screening process, because the percentage of people suffering from malnutrition is very high. Frequently we have to use the full MNA® in nursing homes. The particularity we have with MNA® is that the two parts, screening and assessment, are in fact the same tool. It is a continuous process. This is different to what has happened with other processes. For example in the study of mobility function, we have to use different tools for screening and assessment. Here we can do both with the same tool. Maybe in the hospital we can use the screening process even if the percentage of people with malnutrition is very high.*

Bruno Vellas: *It depends on the setting. It depends on whether you are in acute care, semi-acute or long term care. If it is acute care, it is important to see whether you need to orient it on nutrition or on another topic.*

Kathleen Niedert, RD, Western Home Communities, Cedar Falls, IA, USA: *In 1999, the American Dietetic Association brought together a group of people from long term care facilities, the American Healthcare Association, and the American Association of Homes and Services for the Aging. The government agency that was involved is now known as CMS (Centers for Medicare & Medicaid Services). We had several*

meetings and put together a nutrition risk assessment. At that time, we looked at the MNA® and we felt strongly that it was a good screening tool. For the resident and long term care facility, we felt that it was more a screening tool than an assessment tool. We looked at putting together a tool that we considered an assessment with interventions. At this time we are doing some validation studies. We do not have the data right now. The problem we found with the form that we developed was that approximately 98% of people in nursing homes kicked out into nutrition risk. This is probably accurate because in the States, by the time they get to the nursing home, they are fairly debilitated people. At this point, I am not sure where the MNA® fits into geriatric and long term care in America. I can see it in the retirement communities and assisted living, where we want to keep those people in their own homes or in the least restrictive environment we can. In that sense the MNA® will help us to catch those people and to make interventions early versus waiting until they get into a nursing home when we know that most of them are high risk and malnourished, as your studies show.

Pat Anthony, MS, RD, Nestlé Nutrition, Vevey, CH: *I would like you to comment on how they formulated the NRS. I understand that its development was based on literature review. I notice that you listed entry into acute care as the site for use of the tool within the acute care setting. That is very interesting. It may identify those at risk going into acute care, as those that you do not have to worry about. However, it is probably not useful to take it any further in acute care. It was mentioned that the people who are admitted to the nursing homes in the US are so debilitated going into the nursing homes that are they are almost at that same point of acute care. Maybe it should be used at entry into the nursing home. The other side of it is to consider whether that is the population where we will not make an impact anyway. It is too late at that point.*

Cornel Sieber: *You are completely right. A huge retrospective analysis was used to develop the NRS. The NRS was developed because they were not happy with the tool they had beforehand, with special regard to the elderly population. To develop the NRS for the acute care setting, different topics were brought together for more objectivity, like the SGA, and linked to acute illnesses in order to determine a grading. Then a prospective international study was undertaken. It is not strictly correct to say that it was validated because this study is just now being processed and is not yet published. It looks to be validated from the data that I have seen. The elderly population studied was too small in size and comprised mostly of patients from our institution. It must also be looked at in other institutions. Acute care differs a lot depending on where you are. It is something which is coming up more frequently and which is interesting. The MNA® is easy to perform. I would not make it a first line tool. However, if we have problems in the acute care setting, we could use the MNA® at the beginning as a screening tool, especially the short form. I think that it is a valuable tool. If the patients are shown to be at risk, you should proceed to the assessment part. If you have to do it within the first 24 hours, you are obliged to do the screening. You will never be obliged to undertake a real assessment within the first 24 hours. It is a two-step approach. Theoretically, aside from the MNA®, when the NRS is validated you could use the first part for those cases where you cannot use the short form MNA®.*

Pam Charney: *I agree. When you first look at the literature relating to nutrition screening and nutrition assessment, it is very muddy because so many studies confuse the two terms. With screening you are looking for the presence of a particular condition in a population that has no outward signs of that condition. When I taught medical students and residents, I told them, that if the patient looks malnourished, they probably are. My goal as a manager and a dietitian is to ensure that, given a 4.8 day length of stay, I come up with an intervention which will be meaningful and will carry on when the patient goes home. In particular for the elderly population, who are becoming a great proportion of our patients, I want to be sure that I can set up the services that need to be set up in the home. I also want to be sure that they have support systems and everything else in place. In many settings, that takes at least a day of that stay. The goal is to figure out where the patient falls on the spectrum and to get treatment or intervention started as quickly as possible. I think that the MNA® falls into that spectrum. We need to figure out which pieces to implement, at which point in time; to get things started as soon as possible rather than waiting for days.*

Tommy Cederholm: *I agree that NRS must not challenge MNA® in any elderly care setting. NRS was actually developed from the acute care setting. It combines body mass index, weight loss and eating difficulties in various ways. We need the screening for settings where we have a very fast turnover, where we have patients for two, three or four days, and where we will not be able to do a more thorough assessment. I would also like to point out the difficulties we have in assessing weight loss. It is always difficult to get an exact history from the patient about how much weight they have lost. I think that we should always think that any weight loss is deleterious or is an observation. All weight loss is more or less unintentional. We should make the instruments easier in that respect. It is very difficult to get the elderly, or any patient, to say how much weight they have lost.*

Annalynn Skipper, PhD, Nutrition Consultant, Chicago, IL, USA: T*he distinction between assessment and screening is unclear. With the nutrition care process and the new nutrition diagnoses that have been developed, this will work itself out in the US, as tools are tested. We will have nutrition screening, and many of the assessment indicators will either go into the etiologies of the diagnoses or into the monitoring phase. We can expect to see some changes and some new information along those lines because we are half way through this ten year project. We seem to have a form of legislated screening, which takes place at a certain point where a patient contacts an acute or long term care bricks and mortar institution. However, much of the healthcare delivered in this country is done electively and at other locations. Screening probably needs to take place much earlier in the process. We need complete screening when a patient first encounters the healthcare system. We frequently hear businessmen in healthcare say that we need to deliver the right care, at the right time and at the right cost. To that, I would add, at the right location. I would encourage those who are conducting further studies of screening to look for an optimum location. I also believe that we need a single tool. We need to expand the MNA® beyond the elderly population. Then dietitians could use it more often.*

David Thomas, MD, Saint Louis University, St. Louis, MO, USA: *I would recommend the following article: Kondrup J, Clinical Nutrition, 2003; 22:415-421. It contains data, which is absolutely beautiful. They went about this critically, mentioning BMI, weight loss and bad appetite. They also mentioned a list of diseases. The requirement for the appearance of the disease in that list was a randomized controlled trial showing improvement in nutritional status. It is a funny list, which includes head injury and bone marrow transplantation, but a lot of other conditions that we probably would have added to the list are absent. His method was absolutely brilliant. I would use the MNA®, but I am awfully tempted to use this in acute care simply because he requires actual data showing the nutrition of the patient. This speeds up intervention within the time limit of 4.8 days available to treat the patient. In a large hospital, it helps to target the people who absolutely need intervention*

NUTRITIONAL SCREENING TOOLS – HOW DOES THE MNA® COMPARE?

as soon as possible. It is a really well done paper.

Cornel Sieber: *It is also important that age over 70 is considered as grade one. For the purposes of diagnosis, there are studies, which will give a score of two for a stroke, which is moderate. In the case of a patient with stroke who is over 70, which most stroke patients are, that will result in a score of three, which means that you must intervene.*

Cameron Chumlea: *There are extensive reports with regard to weight, dealing with weight stability, weight loss and weight gain, but they are for much younger individuals. There is insufficient information dealing with the elderly. I would like to ask a question of the physicians. If a patient is given the MNA® and is found to have a score above 24, they have adequate nutrition. Do you really need to know that they are at risk of malnutrition or that they are malnourished? Do you just need to know that they are well nourished or not well nourished? Does it really need to be broken down into those two other categories or is it just a yes/no answer? Does it depend on the setting in which it is administered? You need to know yes or no, but you do not need to know yes and then shades of grey.*

Pam Charney: *During the admission process, it is a yes or no. Do I need to see them or not? Some facilities use complicated methods to figure out who needs to be seen. I want a tool, which gives me the yes or no answer, see them or do not see them. It simplifies the process and gets to the intervention as quickly as possible. I do like the yes or no approach to the screening aspect.*

Bruno Vellas: *If the MNA® score is less than 17, the patient usually has protein-calorie malnutrition and low albumin. In many cases, they will also have some kind of hypercatabolism. The nutritional intervention will not be the same in those who have an MNA® of between 17 and 23.5. Those individuals have a decrease in calorie intake, but they do not yet have a decrease in albumin and weight. They do not yet have protein-calorie malnutrition, but they will if untreated. We can prevent the protein-calorie malnutrition in this population*

Cameron Chumlea: *If you know that they are at risk of malnutrition, would you not find out that they also have protein-calorie malnutrition in the testing process?*

Bruno Vellas: *No, because they do not have it. Many studies have shown that if you test for albumin in the population scoring between 17 and 22.5, you will find that their albumin level is normal. However, if we do nothing but follow this population, they will develop protein-calorie malnutrition. One of the greatest benefits of MNA® is to be able to target the population that will develop protein-calorie malnutrition if you do nothing.*

Pat Anthony: *One of the benefits of the MNA® will be that it will drive us towards a certain way of intervention. That means that once you have identified that person as someone you need to see, you would then do the more complete form which would drive your intervention.*

Pam Charney: *Correct. The MNA® score will not dictate whether I act or not. Rather it will allow me to direct resources to get the right care to the right patient. Once we have identified a patient needs to be seen, we can then determine whether we need to see them immediately or whether we can provide an intervention that is less aggressive but aimed at preventing the occurrence of full blown malnutrition. It allows us to direct very scarce resources very quickly and to get the right level of care to the right patient. Once we do the full MNA®, we can figure out the right intervention.*

Bruno Vellas: *We can also save money. We do not have to do biochemical measures in those measuring between 17 and 23.5 because their albumin levels will be normal. People with an MNA® score between 17 and 23.5 can be helped with dietetic advice. Those with a score of less than 17 will need more active intervention.*

David Thomas: *Your aim was to get a yes/no answer. You tried to manipulate the data, in many ways, to get a yes/no answer. The problem is that you cannot do that. It is statistically impossible. You did not want three categories when you did this; you wanted two, but you should view this as two categories. If they are scoring normal and you have scare resources, you do not have to intervene. Personally, I think you should see everybody. Everyone ought to have a nutritional analysis, but if they are normal, then you do not have to intervene as urgently. If they are at risk or malnourished, then you do have to intervene urgently. There are really only two categories. The reason they came up with a third category is that the discriminate analysis between the gold standard that they used and the test score was in a grey zone. The at-risk category does not really mean that they are okay but at risk. What it means is that you cannot tell. Therefore see those people too.*

Cameron Chumlea: *That was the point I was getting at. If their nutrition is normal, fine. If it is abnormal, you need to see them but you do not need to worry whether they are a 17 or a 21. That does not matter. Your treatment will be the same regardless.*

Bruno Vellas: *That is exactly what we did when we did the first study. We had some patients where we could say yes, some where we could say no, and some others where we did not know. Looking at this group, who scored between 17 and 22.5, where we were not sure, we did more and more studies of the literature. It was found that immunological status was not the same. Generally the prognosis is not the same and we called them at risk.*

Yves Guigoz, PhD, Nestlé Product Technology Center, Konolfingen, CH: *At the beginning we also had biochemical measurement in the test. We saw that it did not bring greater validity to the test.*

Bruno Vellas: *The best way is to separate less than 23.5 or more than 23.5. When it is less than 23.5, more clinical nutritional advice is really important.*

Phillip Garry, MD, University of New Mexico, Albuquerque, NM, USA: *If somebody scores less than 17 do you go back and look at where the low scores are and base your treatment on certain areas of marking?*

Bruno Vellas: *Yes, we do, but we must also add a biological assessment to have a greater idea about the severity of the disease, the catabolism and cachexia that could be present in this group.*

David Thomas: *You have to see the patient to see what is going on. Everything we have talked about, teeth, appetite, drugs, medication, there is a whole algorithm that you go through. You check through the examination to figure out why. Even if the MNA® says somebody is normal, there are false negatives.*

Cameron Chumlea: *I have also dealt with pediatrics, where you use growth charts. A kid comes in and you plot him on the growth chart. The thing that you have to teach pediatricians is that if the child is between two lines on the growth chart they are ok. If they are above or below the lines, that is a flag and you must start asking why the child is here. Look at the parents. In a sense, the MNA® does the same thing. It categorizes people into the okay group or the group where you really need to go and start asking questions as to why they are there.*